

H₂-Mobilität in Wien – von der Planung bis zur Umsetzung

Georg Tinkhauser | Wien Energie
Johannes Liebermann | Wiener Linien

Diesel Euro VI
(synthetic Diesel)

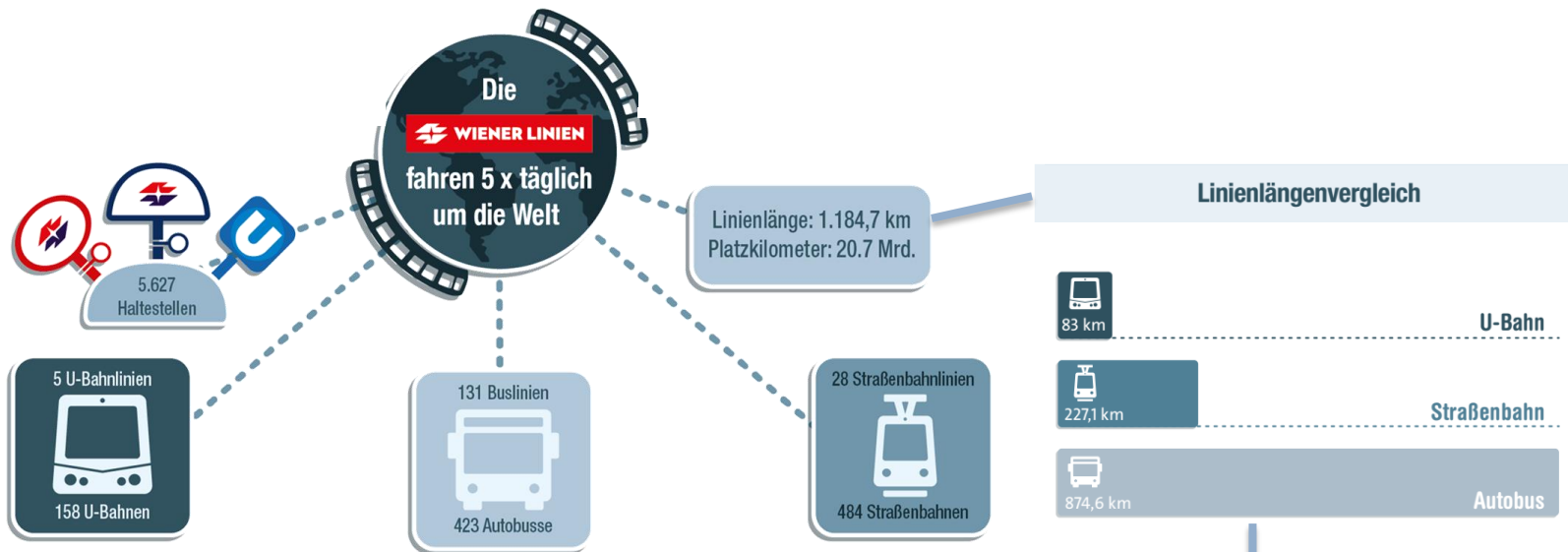
Hydrogen

Battery



Die Stadt gehört Dir.

Wiener Linien- Fuhrpark & Betriebsdaten



Quelle: Wiener Linien

Platzkilometer	12.982 Mio. km	3.388 Mio. km	4.373 Mio. km
Fahrgäste	272 Mio.	123 Mio.	200 Mio.



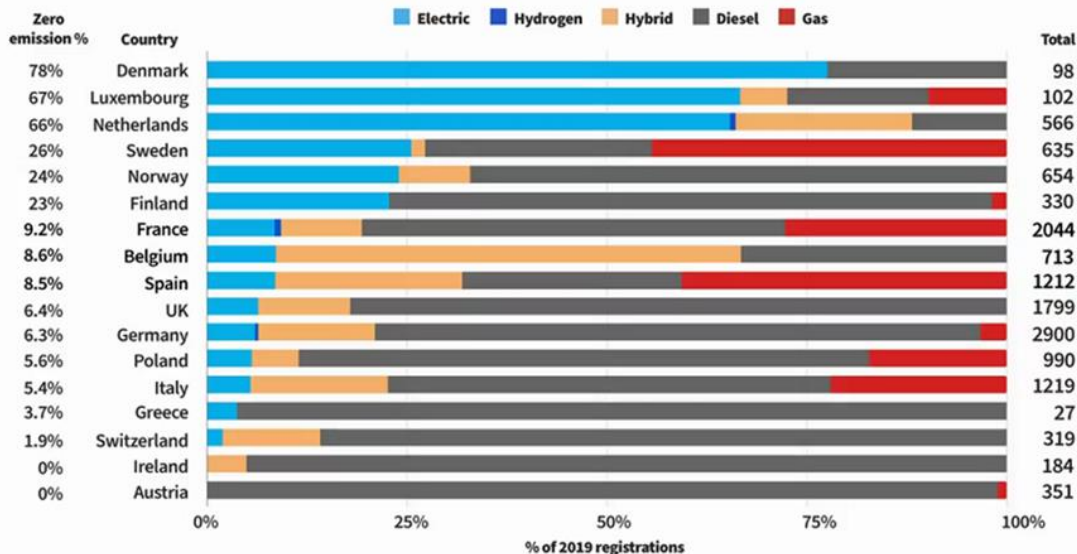
Die Stadt gehört Dir.

Why is Hydrogen a topic for the bus department?

- One of the only solutions for heavy bus traffic within a city like Vienna.
- Currently we are using a modern Diesel Euro VI bus fleet, which cannot be easily replaced with battery electric busses (especially articulated busses).
- We are dealing with such an heavy city traffic because of:
 - Very short intervals
 - Very short distances between the stops (< 400 metres)
 - Very long line lengths
 - Heavy topography
 - Strong stop and go traffic
 - Very high passenger numbers

Registration of zero emission buses 2019

Zero emission urban buses: who leads?



New urban buses registered in 2019 >8 tonnes Gross Vehicle Weight with ZE% being the sum of electric and hydrogen buses divided by the total. Trolley buses are not included in the electric bus data but make up a small amount of annual new registrations (49 in 2019)

Bus delivery 2022- 2027

2019

#buses



61



2025 - 2027

57



221



2022 - 2027

225



132



2022 - 2027

78



Battery

0



2023 - 2025

62



Hydrogen

0



2023 - 2024

10



Battery

12



2024 - 2025

10

426

436

Diesel EURO VI
pre CVD

360

Battery, Hydrogen
post CVD

82



WIENER LINIEN

Die Stadt gehört Dir.

1st contact with hydrogen

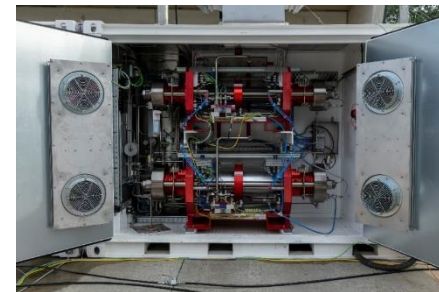
Duration of the test: 02/06 – 12/06/2020.



OEM: Solaris with Ballard-FC (350bar)



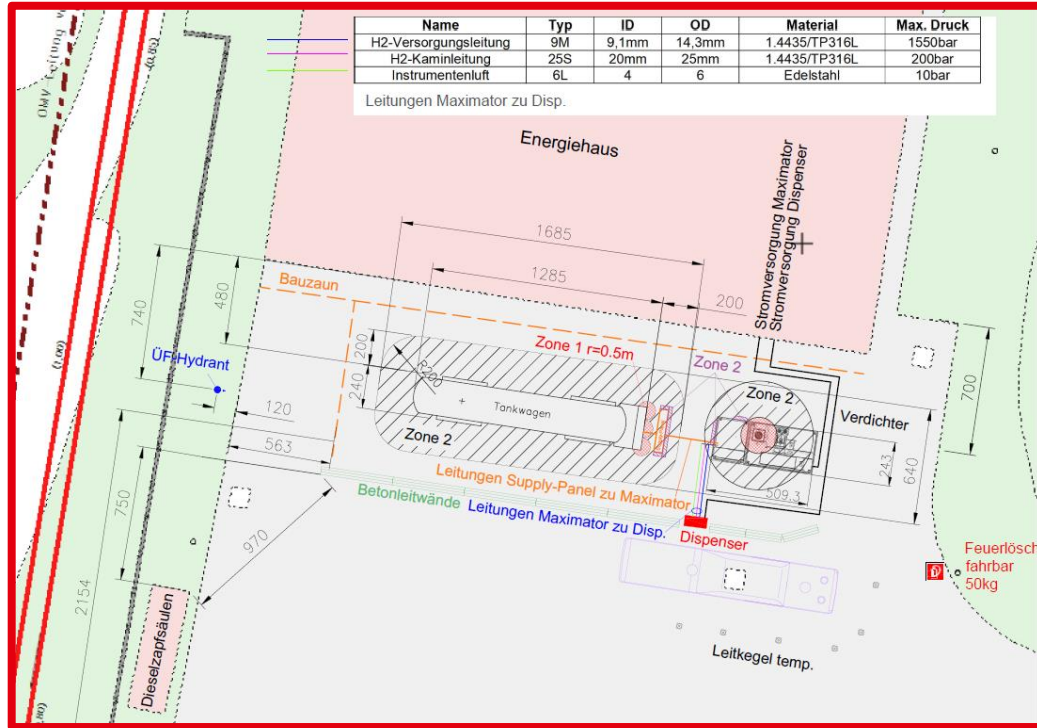
Trailer: Air Liquide (200bar, ~300kg H₂)



Compressor: Maximator (up to 1000bar)

Refueling took about 14 min (without cooling and type 4 tanks)

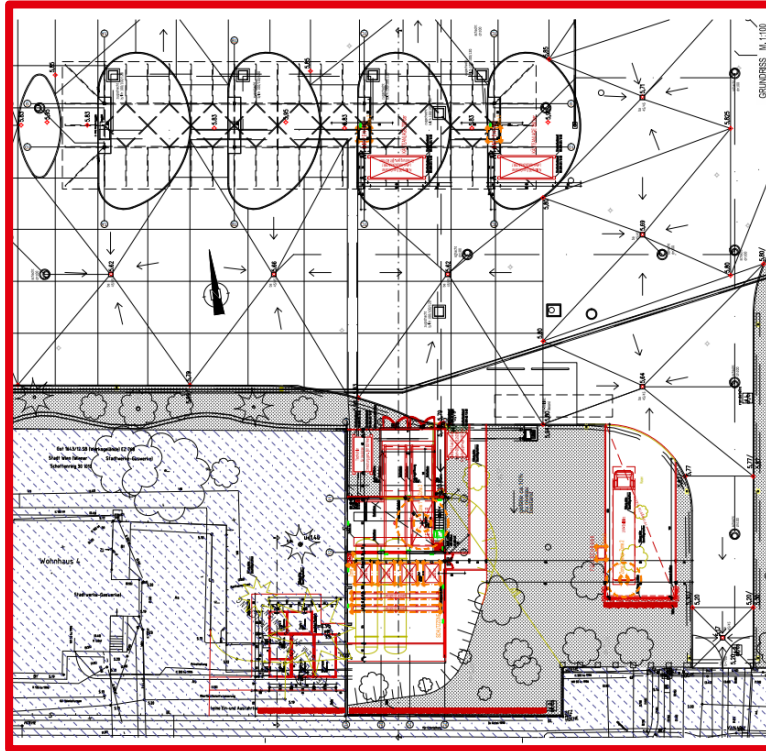
Bus depot Leopoldau | 1st temporary HRS 06/2020

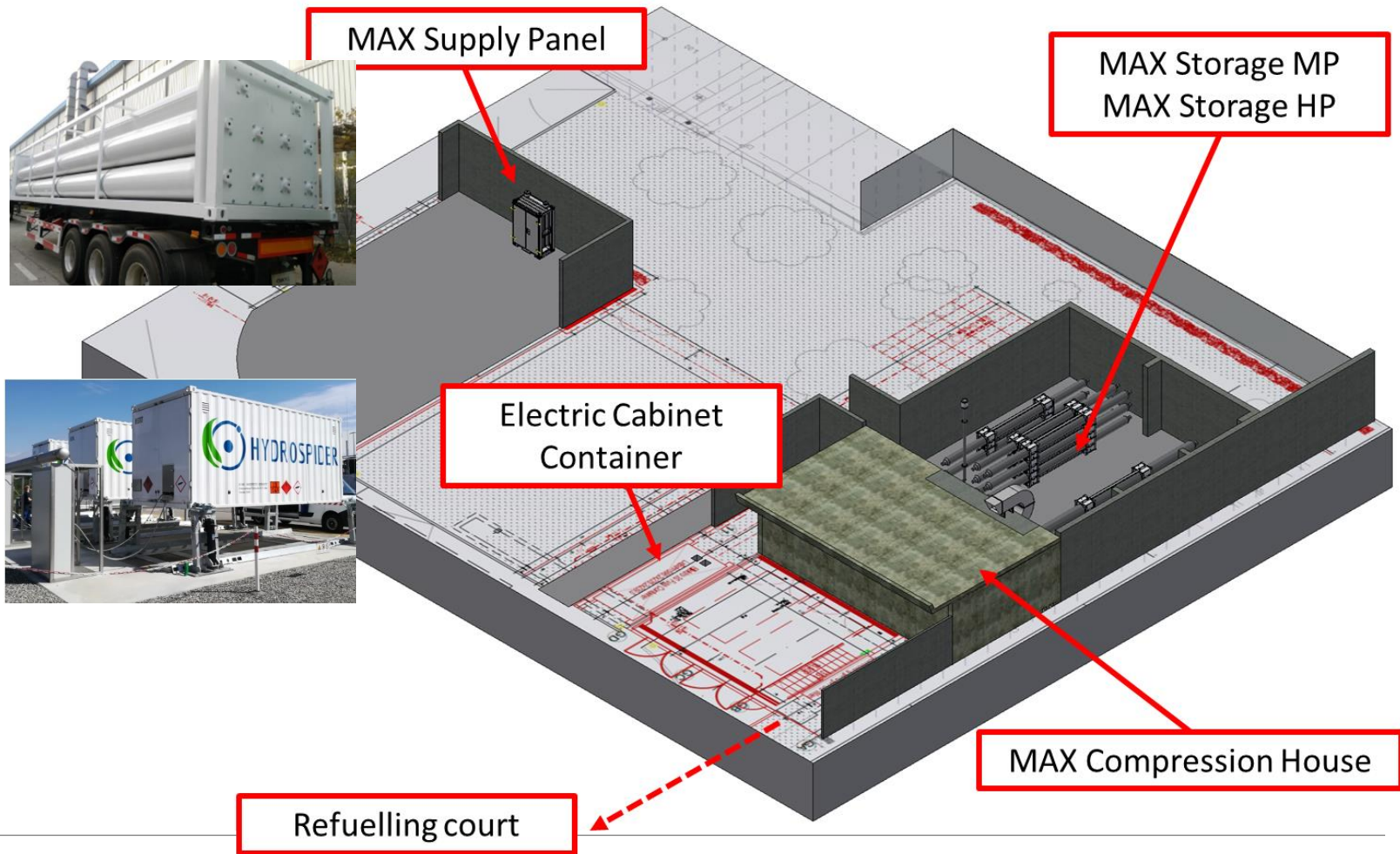


1st temporary HRS 06/2020



Bus depot Leopoldau | 1st stationary HRS end of 2021





MAX Supply Panel

MAX Storage MP
MAX Storage HP

Electric Cabinet
Container

MAX Compression House

Refuelling court

Requirements for explosion protection



Our first hydrogen test buses

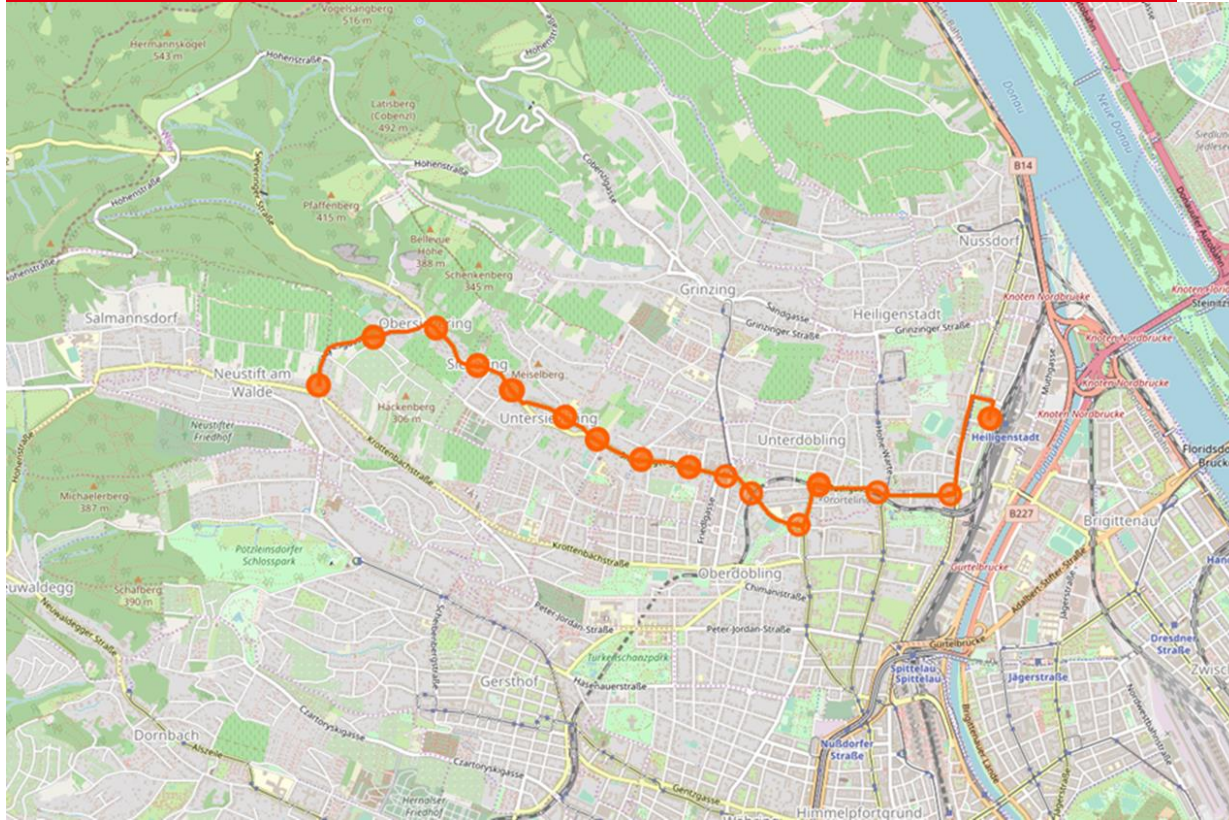
- Hyundai 3rd generation
 - 700bar
 - 2x95kW Hyundai-FC
 - 180kW central motor (ZF)



- Solaris H2-Urbino
 - 350bar
 - 70kW Ballard-FC
 - 2x125kW hub motor (ZF)



Wasserstoffbuslinie 39A (2023 – 2024)



Linienbetrieb seit
11/11/22



